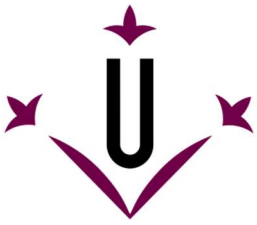

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TITLE:

The influence of COVID-19 on the mental health of final-year nursing students: comparing the situation before and during the pandemic

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Abstract

The COVID-19 pandemic has had an important impact on the academic world. Bearing in mind that university studies already have an influence on the mental health of students, and especially those studying health sciences, we proposed this study with the aim of analysing whether the pandemic has affected the mental well-being of final-year nursing students. This was a multi-centre study, with a descriptive, longitudinal and prospective design. Mental well-being was evaluated using the General Health Questionnaire. We also examined whether the subjects had experienced the pandemic and included several sociodemographic, academic and health-related variables. A total of 305 participants were included in the study, of whom 52.1% had experienced the COVID-19 pandemic. Statistically significant differences were found between the two groups studied, in terms of their age, how they had entered university, their average mark, and their mental well-being, self-esteem, emotional exhaustion and sense of coherence. In the case of their mental well-being, a direct association was found with the pandemic situation (OR=2.32, p=0.010) and the emotional exhaustion scores (OR=1.20, p<0.001), while an inverse association was found with the score for the sense of coherence (OR=0.45, p<0.001). This study shows that the mental health of students is a significant aspect to take into consideration when training nursing staff at university to promote healthy habits and coping strategies. It is also important to train students in the use of pandemic materials, given the impact that this has been shown to have on

the mental health of the students themselves, but also on that of the general public, who will be treated by these future nursing professionals.

Keywords: coronavirus; mental health; mood; nursing students; pandemic;

1. Introduction

The situation caused by the COVID-19 pandemic and enforced confinement, which has included the closing of universities, has forced the majority of the academic world to modify its teaching approach and to adopt a virtual format, even in disciplines in which - given their very nature, values and professional ethics - this would previously have been almost unimaginable. Many universities have had to adopt novel strategies and digital tools to provide support for students and teaching staff and have had to find workable solutions for the current situation and the complex problems that it poses (Choi et al., 2020; Leigh et al., 2020).

Nursing and medical students, doing university degrees in the field of health sciences, have also had their clinical practice sessions interrupted as a result of decisions taken by the governments of their autonomous communities or by their universities, which were subsequently ratified by a ministerial order (Cervera-Gasch et al., 2020). At the same time, in the case of nursing and medical students, the Spanish authorities have also legally regulated the contracting of final-year students, allowing them to work as auxiliary health staff and to carry out support activities under the direct supervision of an experienced professional (Ministry of Health, 2020). In this way, many students have entered the world of work without having finished their official training and with question marks regarding their evaluation and whether they possess the relevant academic competences required to finish off their degree studies. On top of this, they suffer the added worry of possibly transmitting the virus to another member of their family members; this has been reported in studies carried out in relation to other health-care pandemics (Wong et al., 2004).

2. Background

The period from the beginning of their university studies is a critical one in terms of the appearance of mental illnesses in the lives of many young people. The effects of academic life on the mental health of university students have already been widely

reported (Eleftheriades et al., 2020) and have been associated with a significant deterioration in their academic performance (Hysenbegasi et al., 2005) and also in rates of students abandoning certain studies (Bakker et al., 2020; Bowman et al., 2020). This phenomenon is most relevant in degrees associated with health (Hughes and Byrom, 2019), such as nursing and medicine, in which high levels of depression and anxiety have been reported in comparison with other academic disciplines (Iorga et al., 2018; Mitchell, 2018; Tung et al., 2018).

Several research studies involving students of medicine have reported higher than average levels of depression in first-year degree studies prior to them undertaking clinical practice sessions, and greater levels of anxiety on their reaching the final year before graduation (Iorga et al., 2018). In the case of nursing students, clinical practice sessions are usually in the initial courses, with students having to combine these with a heavy academic workload; this has been shown to be one of the factors that make these students particularly sensitive to stress (Ríos-Risquez et al., 2018), and it has a direct impact on their mental health. A large variety of situations have been reported as potential sources of stress. These relate to academic requirements, social conditions and clinical factors. The most common factor, the academic requirements, relate to doing exams and evaluations and presenting pieces of work. Sources of stress in the social area and relating to external factors include having to make new friends, working with people who they do not know, and managing the finances of their studies. In the case of clinical factors, the main issues are the sensation of lacking the knowledge and expertise required to look after a real patient, and having to work under the supervision of tutors (Jimenez et al., 2010; Pulido-Martos et al., 2012). This third group is often experienced with greater intensity than the other two.

Some studies have suggested a tendency for an improvement in the psychological health of students in their final year, compared with that of first year students. This would seem to suggest that doing a Degree in Nursing could even act as a factor that protects against the appearance of mental health problems (Wang and Zhao, 2020). However, this would seem to contradict much of the literature, which says that the final year of the degree is one of the most stressful for students and is associated with a greater rate of depression

due to the accumulation of complex situations experienced in this last period of a student's academic life (Smith and Yang, 2017).

On the other hand, the pandemic situation caused by COVID-19 has affected the lives of many young people in the form of confinement and enforced social isolation. As a result, they have shown higher levels of hostility, anxiety and interpersonal sensitivity than older adults (Becerra-García et al., 2020; Usher et al., 2020). In the case of university students, it has been possible to observe the effects of this in a very clear and evident way. Results have been obtained regarding the effects of confinement and the negative impact that it has had on their mental health. Furthermore, doing more advanced courses has been a predictor for the appearance of more symptoms of anxiety and depression, amongst other complaints (Li et al., 2020; Wang and Zhao, 2020). However, the highly exceptional nature of the situation experienced by students in the final year of their nursing degree has not yet been studied, nor has it been compared to the final year of studies experienced by nursing students who have not experienced a pandemic. Some of these students decided to join hospital units where they provided medical support to cover some of the public health requirements arising due to the pandemic; others were subject to lockdown, like the majority of the general population. It should be added that although clinical practice sessions were suspended, most other academic activities continued via distance learning and virtual sessions.

It was therefore necessary to conduct a more detailed study of the effects that the pandemic has had on nursing students in their last year at university. For this reason, the aim of the present study was to establish whether the situation provoked by the COVID-19 pandemic has affected the mental well-being of university students studying their final year of nursing.

3. Methods

3.1. Study design

A transversal descriptive study was carried out, using data that form part of a multi-centre longitudinal and prospective study which was carried out at the Nursing Faculties of the Universitat de Lleida, Universitat Rovira i Virgili (Tarragona) and Universitat de Girona, all of which are in Catalonia (Spain). This study began in 2017 and focuses on

emotional exhaustion related to academic activity in students of nursing. When the research began, data were collected on all students in each course of the Degree in Nursing. Those initially doing the first year of nursing have been subject to monitoring through until they finished their studies in the fourth year.

3.2. Participants and data collection

The data used in the present study correspond to students in the final year of their studies at two different points in time. On the one hand, data were collected prior to the COVID-19 pandemic: in May 2017, using an on-paper questionnaire. On the other, they were gathered in the middle of the pandemic: in May 2020, via a questionnaire that the students had to answer online, due to the state of alarm and confinement. The two questionnaires included the same variables, with specific questions about COVID-19 being incorporated into the 2020 version.

3.3. Measures

The variable that was considered dependent was mental well-being, which was evaluated using the General Health Questionnaire (GHQ) (Goldberg, D.P.; Hillier, 1979; Lobo A, Pérez-Echeverría MJ, 1986). We considered a total score of more than 23 points as the threshold for the presence of mental health problems. On the other hand, the main independent variable was whether or not the student was assessed at the time of the pandemic.

The rest of the variables selected were classified according to whether they were sociodemographic, academic or related to health status.

- Sociodemographic variables: age, sex, marital status, number of children and employment status.
- Academic variables: university of origin, how the student entered university, average mark according to the academic record, means of financing their studies and whether they had a grant to pay for their studies.
- Health status variables: perceived level of stress associated with the training and evaluative activities, academic emotional exhaustion as measured by the Emotional Exhaustion Scale (ECE) (Ramos et al., 2005), self-esteem as measured

by the Rosenberg self-esteem scale (Atienza, 2000; Rosenberg, 1965) and the sense of coherence, evaluated with the Sense of Coherence Scale (SOC) (Antonovsky, 1993; Vega Martínez et al., 2019).

3.4. Ethical considerations

Before beginning the study, we sought authorisation from the deans of the faculties involved to carry it out. All the students were informed of the aim of the study via a fact sheet. Written informed consent was then obtained from all those participating, prior to data collection. Students were also offered the possibility to withdraw from the study at any time.

With regard to the confidentiality of the data, in the transversal design stage it was not possible to specify any type of identification, so anonymity was maintained and guaranteed at all times. In the case of the longitudinal design phase, a numbered identification was requested from each student (stating their day and month of birth and giving the last three digits of their national identity document); this allowed us to follow the group over the following four years while maintaining the anonymity of individual students.

3.5. Data analysis

A descriptive analysis of the variables that were the objective of the study was carried out using measurements of distribution frequencies and of the central tendency and dispersion; this was based on the nature of the variables. In order to identify the factors that were associated with general state, we first carried out an analysis of the differences between groups; this was based on the nature of the variables (Chi-square or T-Student), or on their equivalents, in cases in which the criteria for applying these analyses were not met. Later, in order to identify the factors that were independently associated with general health, any variables that obtained a level of statistical significance of < 0.05 were incorporated into the regression logistic through different models. In model 1, we introduced the independent variable, which was whether or not the student experienced the pandemic; model 2 included variables to assess socio-demographic and academic factors and also the level of stress generated by academic

activities and evaluations, while; model 3 examined the rest of the variables relating to health status.

The data were analysed using version 23 of the IBM SPSS statistics program, and the level of significance accepted was $p < 0.05$.

4. Results

4.1. Sample characteristics

A total of 305 participants were included in the study, whose academic, sociodemographic and health-related characteristics are described in Table 1. 32.8% were students from the Universitat de Lleida (UdL), 30.5% from the Universitat Rovira i Virgili (URV), and 36.7% from the Universitat de Girona (UdG). Their median age was 24 years old and the vast majority were women (86.5%). Most of the students were single and did not have children. 72.5% of the sample had entered university after passing the standard university entrance examination (PAU).

The participants who answered the questionnaire outside the COVID-19 pandemic period represented 47.9% of the whole cohort; the remaining 52.1% corresponded to the group whose participants answered the questionnaire during the pandemic. We performed an analysis to study differences between the two groups, finding statistically significant differences in their ages, way of entering university, average grade, and Goldberg, Rosenberg, ECE and SOC-13 scores. The median age was lower in the group of students who answered the questionnaire during the pandemic ($p<0.001$), who were also the students who had most entered university via the university entrance exam (PAU) ($p=0.007$). The median grade of the students was also lower during the pandemic ($p=0.008$). With respect to the rest of scores, the Rosenberg and ECE scores were higher for the period corresponding to the COVID-19 pandemic ($p=0.029$ and $p=0.025$, respectively), whereas the SOC-13 score was lower ($p<0.001$).

Table 1. The characteristics of the participants and the differences between those who answered the questionnaire outside and during the COVID-19 pandemic

	All participants (n=305)	No COVID-19 (n=146)	During COVID-19 (n=159)	p
Sociodemographic characteristics				
Median age [IQR]	24 [22-26]	25 [25-28]	22 [22-24]	**0.000**
Sex				0.179

- Female	224 (86.5)	120 (83.9)	104 (89.7)	
- Male	35 (13.5)	23 (16.1)	12 (10.3)	
Marital status				
- Single	260 (85.5)	130 (89.7)	130 (81.8)	
- Married	9 (3.0)	4 (2.8)	5 (3.1)	0.162
- Free union	33 (10.9)	11 (7.6)	22 (13.8)	
- Divorced	2 (0.7)	0 (0.0)	2 (1.3)	
Number of children				
- 0	288 (96.0)	135 (95.7)	153 (96.2)	
- 1	10 (3.3)	6 (4.3)	4 (2.5)	0.484
- 2	1 (0.3)	0 (0.0)	1 (0.6)	
- 3	1 (0.3)	0 (0.0)	1 (0.6)	
Work				
- Yes	129 (42.4)	59 (40.7)	70 (44.0)	0.557
- No	175 (57.6)	86 (59.3)	89 (56.0)	
Academic characteristics				
University				
- UdL	100 (32.8)	53 (36.3)	47 (29.6)	0.378
- URV	93 (30.5)	40 (27.4)	53 (33.3)	
- UdG	112 (36.7)	53 (36.3)	59 (37.1)	
Way of getting into university				
- University access exam (PAU)	221 (72.5)	96 (65.8)	125 (78.6)	
- Another university degree	11 (3.6)	5 (3.4)	6 (3.8)	
- Vocational training	62 (20.3)	42 (28.8)	20 (12.6)	**0.007**
- Over 25 years old	9 (3.0)	2 (1.4)	7 (4.4)	
- Over 45 years old	2 (0.7)	1 (0.7)	1 (0.6)	
Median grade [IQR]	7.90 [7.30-8.10]	7.98 [7.44-8.20]	7.88 [7-8]	**0.008**
Source of finance				
- Family	72 (23.6)	35 (24.0)	37 (23.3)	0.411
- Mixed	175 (57.4)	79 (54.1)	96 (60.4)	
- Own	58 (19.0)	32 (21.9)	26 (16.4)	
Grant				
- Yes	165 (54.1)	77 (52.7)	88 (55.3)	0.648
- No	140 (45.9)	69 (47.3)	71 (44.7)	
Health status characteristics				
Levels of stress				
Master classes				
- Low	279 (91.5)	135 (92.5)	144 (90.6)	0.553
- High	26 (8.5)	11 (7.5)	15 (9.4)	
Seminars				
- Low	213 (69.8)	99 (67.8)	114 (71.7)	0.460
- High	92 (30.2)	47 (32.2)	45 (28.3)	
PBL				
- Low	126 (42.3)	63 (45.3)	63 (39.6)	0.320
- High	172 (57.7)	76 (54.7)	96 (60.4)	
Laboratory/Simulation				
- Low	104 (34.3)	47 (32.6)	57 (35.8)	0.557
- High	199 (65.7)	97 (67.4)	102 (64.2)	
Clinical practices				
- Low	126 (41.4)	55 (37.9)	71 (44.7)	0.235
- High	178 (58.6)	90 (62.1)	88 (55.3)	
Team work				
- Low	177 (58.0)	89 (61.0)	88 (55.3)	0.321
- High	128 (42.0)	57 (39.0)	71 (44.7)	
Exams				
- Low	19 (6.2)	11 (7.5)	8 (5.0)	0.366
- High	286 (93.8)	135 (92.5)	151 (95.0)	
Written work				
- Low	128 (42.0)	60 (41.1)	68 (42.8)	0.768
- High	177 (58.0)	86 (58.9)	91 (57.2)	

Oral presentations - Low - High	53 (17.4) 252 (82.6)	22 (15.1) 124 (84.9)	31 (19.5) 128 (80.5)	0.308
Goldberg score Median [IQR]	23 [15-32]	19 [14-28]	23 [18-36.5]	**0.000**
Median Rosenberg score [IQR]	32 [27-38]	31 [25-38]	34 [29-38]	**0.029**
Median ECE score [IQR]	30 [23-35]	28 [23-33]	31 [24-36]	**0.025**
Median SOC-13 score [IQR]	66 [57-75]	68 [60-76]	63 [54-71]	**0.000**

Qualitative variables are expressed with absolute frequency (percentage), while quantitative variables are expressed with the median [IQR].

In the case of mental health status, 48.5% of the sample obtained a score of over 23 in the GHQ-28. Table 2 shows data on sociodemographic, academic and health status characteristics, based on mental health status. Analysing the differences between the groups of participants with total Goldberg scores of under and over 23, respectively, we found statistically significant differences between several variables. These included the pandemic situation, age, and level of stress caused by certain academic and evaluation activities, the ECE score and the SOC-13 score. We observed that during the pandemic, there was a greater percentage of students with high total Goldberg scores than outside the COVID-19 pandemic period ($p<0.001$). The median age was observed to be a little lower in the group of participants with higher total Goldberg scores ($p=0.046$). We also found that students with higher total Goldberg scores also registered higher levels of stress related to their academic and evaluation activities, including: master classes ($p=0.027$), seminars ($p=0.036$), laboratory work/simulations ($p=0.008$), clinical practices ($p=0.020$), team work ($p=0.005$), written work ($p=0.001$) and oral presentations ($p=0.028$). In the case of the ECE and SOC-13 scores, the students with the highest Goldberg scores also registered the highest and lowest scores on these scales ($p<0.001$), respectively.

Table 2. Differences in characteristics between patients with total Goldberg scores of under and over 23

	Goldberg ≤23 (n=155)	Goldberg>23 (n=146)	p
Sociodemographic characteristics			
Pandemic situation - Yes - No	64 (41.3) 91 (58.7)	95 (65.1) 51 (34.9)	**0.000**
Median age [IQR]	24 [22-26]	23.5 [22-25]	**0.046**
Sex	114 (84.4)	106 (88.3)	0.368

- Female - Male	21 (15.6)	14 (11.7)	
Marital status - Single - Stable partner	135 (87.1) 20 (12.9)	124 (85.5) 21 (14.5)	0.691
Children - Yes - No	8 (5.2) 147 (94.8)	8 (5.5) 138 (94.5)	0.902
Work - Yes - No	69 (44.5) 86 (55.5)	59 (40.7) 86 (59.3)	0.503
Academic characteristics			
University - UdL - URV - UdG	42 (27.1) 51 (32.9) 62 (40.0)	57 (39.0) 41 (28.1) 48 (32.9)	0.087
Way of getting into university - University access exam (PAU) - Others	107 (69.0) 48 (31.0)	112 (76.7) 34 (23.3)	0.135
Median grade [IQR]	7.89 [7.20-8.19]	7.90 [7.39-8.00]	0.860
Source of finance - Own - Family/Mixed	34 (21.9) 121 (78.1)	37 (25.3) 109 (74.7)	0.487
Grant - Yes - No	79 (51.0) 76 (49.0)	84 (57.5) 62 (42.5)	0.253
Health status characteristics			
Levels of stress Master classes - Low - High Seminars - Low - High PBL - Low - High Laboratory/Simulation - Low - High Clinical practices - Low - High Team work - Low - High Exams - Low - High Written work - Low - High Oral presentations - Low - High	 147 (94.8) 8 (5.2) 117 (75.5) 38 (24.5) 70 (46.1) 82 (53.9) 64 (41.6) 90 (58.4) 74 (47.7) 81 (52.3) 102 (65.8) 53 (34.2) 10 (6.5) 145 (93.5) 79 (51.0) 76 (49.0) 34 (21.9) 121 (78.1)	 128 (87.7) 18 (12.3) 94 (64.4) 52 (35.6) 54 (38.0) 88 (62.0) 39 (26.9) 106 (73.1) 50 (34.5) 95 (65.5) 73 (50.0) 73 (50.0) 9 (6.2) 137 (93.8) 48 (32.9) 98 (67.1) 18 (12.3) 128 (87.7)	 **0.027** **0.036** 0.164 **0.008** **0.020** **0.005** 0.918 **0.001** **0.028**
Median Rosenberg score [IQR]	34 [27-38]	31 [27-36]	0.073
Median ECE score [IQR]	24 [20-30]	34 [31-38]	**0.000**

Median SOC-13 score [IQR]	72 [65-78]	58 [50-66]	**0.000**

Qualitative variables are expressed with their absolute frequency (percentage) and the differences between groups are calculated using the Chi-squared test, while quantitative variables are expressed with the median values [IQR] and the differences between groups are calculated using the Mann-Whitney U test.

In the case of the regression logistic, the first model only includes the pandemic situation variable; it shows that the COVID-19 pandemic was statistically significant and increased the probability of having a higher total Goldberg score by a factor of 2.62 (OR=2.62, p<0.001). The second model includes the levels of stress caused by academic and evaluation activities that had been shown to be statistically significant according to the previous analysis. These results revealed that the pandemic situation still remained statistically significant and was associated with higher total Goldberg score (OR=3.00, p<0.001). With regard to the different evaluation activities, only stress caused by laboratory work/simulations and by written work were significant: both were inversely associated with total Goldberg scores (OR=0.55, p=0.030; and OR=0.57, p=0.041; respectively). To perform the third model, the ECE and SOC-13 scales were included-. As a result, we found a direct association between total Goldberg scores above 23 and variables relating to the pandemic situation (OR=2.32, p=0.010) and the ECE score (OR=1.20, p<0.001). We also found an inverse association between higher total Goldberg scores and the SOC-13 score (OR=0.45, p<0.001) (Table 3).

Table 3. Logistic regression models with total Goldberg scores of above 23 categorised the dependent variable, with (1) the pandemic situation as the independent variable; (2) the pandemic situation and levels of stress caused by evaluation activities, including master classes, seminars, laboratory work/simulations, clinical practices, team work, written work and oral presentations as independent variables; (3) the pandemic situation, the levels of stress caused by evaluation activities, including master classes, seminars, laboratory work/simulations, clinical practices, team work, written work and oral presentations, and the ECE scores and SOC-13 scores as independent variables.

Model 1				
	OR	95% CI	Standard error	p
Pandemic situation	2.62	1.63-4.23	0.244	**0.000**
Model 2				
	OR	95% CI	Standard error	p
Pandemic situation	3.00	1.80-5.01	0.262	**0.000**
Levels of stress				
Master classes	0.43	0.15-1.23	0.533	0.115
Seminars	1.03	0.57-1.85	0.300	0.930
Laboratory work/Simulations	0.55	0.32-0.94	0.275	**0.030**
Clinical practices	0.67	0.40-1.12	0.267	0.128
Team work	0.82	0.48-1.40	0.272	0.462
Written work	0.57	0.34-0.98	0.273	**0.041**

Oral presentations	0.57	0.28-1.15	0.364	0.116
Model 3				
	OR	95% CI	Standard error	p
Pandemic situation	2.32	1.22-4.40	0.326	**0.010**
Levels of stress				
Master classes	0.28	0.07-1.03	0.674	0.056
Seminars	1.51	0.72-3.20	0.382	0.278
Laboratory work/Simulations	0.78	0.40-1.55	0.347	0.481
Clinical practices	1.07	0.54-2.14	0.351	0.838
Team work	1.17	0.60-2.26	0.338	0.650
Written work	0.66	0.34-1.30	0.341	0.231
Oral presentations	0.94	0.37-2.38	0.472	0.901
ECE score	1.20	1.13-1.27	0.029	**0.000**
SOC-13 score	0.94	0.91-0.97	0.016	**0.000**

R^2 of model 1 = 0.074.
R^2 of model 2 = 0.189.
R^2 of model 3 = 0.545.

5. Discussion

This study sought to analyse whether the situation caused by the COVID-19 pandemic had affected the mental well-being of final-year nursing students. The results were compared with those of final year students whose data had been collected three years earlier (2017) and who had not therefore experienced the pandemic situation. We also took into consideration other factors that could have affected the mental health of these students, such as socio-demographic and academic variables, and other factors related to their state of health: the level of stress caused by different academic and evaluative activities, emotional exhaustion, self-esteem and their sense of coherence. The results of our study suggest that the nursing students who experienced the pandemic in the final year of their studies reported higher scores on the GHQ-28 scale, perceiving a two-times greater risk of suffering mental health problems than their counterparts who did not have this experience. This indicates that the pandemic had a negative effect on the mental well-being of these students. Emotional exhaustion was also a significant factor for predicting psychological distress. It was also demonstrated that a high sense of coherence can act as a protective factor when it comes to estimating the risk of mental illness.

Along these lines, the mental health of health-care professionals is a challenge which needs to be faced up to from the academic world, because it is those who are currently training who will be future nurses in the health system and who will take care of our society (Fernandez et al., 2012). As has been seen, the pandemic has had an important

impact on the health of much of the population. This impact has not only been physical; it has also had an important effect on people's mental health (Brooks et al., 2020). Final-year nursing students have been particularly affected by this situation. Many of them have become employed within the health system without having finished their training. Some of them have continued their academic tasks while subjected to confinement, while others have been in the front line of action and, like many professionals, in direct contact with the virus and therefore subject to the risk of contagion and sanitary collapse. At the individual level, these are factors that can cause anxiety (Dong et al., 2020; Dubey et al., 2020; Fowler and Wholeben, 2020; Jung and Jun, 2020; Ma et al., 2020).

In our study, 48.5% of the sample obtained a GHQ-28 score of over 23, which was higher than that obtained by other populations of nursing students (Mohebbi et al., 2019; Xu et al., 2014). Of all the variables that could have contextually and environmentally influenced these higher scores, the pandemic situation was the only one that could have conditioned them because no changes had been made to the study plans or to the organisation of the fourth year of the nursing degree at any of the universities monitored in the study. The size of this score will have been due to the fact that a high percentage of the students who have lived through the pandemic situation (59.7%) scored more than 23 in the GHQ-28 test, while amongst those who had not experienced it, only 35.9% registered scores above this cut-off point. Even so, the course in which nursing students found themselves may also have been an important factor because some authors regard the last year of nursing degree as the one in which students face the greatest risk of suffering a deterioration in their psychological well-being (Smith and Yang, 2017). There are, however, others who see greater stress in the first year, given the fact that it tends to be course in which students must cope with the greatest academic load (Wang and Zhao, 2020). The students who scored more than 23 in the GHQ-28 test referred to feeling more stress in the majority of the training and evaluative activities than those who scored lower; the only exceptions to this were the PBL and during exams. Even so, from the regression model, it was observed that the seminars/simulations and written work contributed negatively to the perceived mental well-being of the students. This was probably related to the fact that students mainly do

their clinical practice in their fourth year. At this time, they are expected to do more reflexive and practical work related to hands-on experience in medical units. This was the only thing that could have supposed a greater work load and would have coincided with their practical work.

In the case of the influence of emotional exhaustion on worse mental health, it has been reported in the bibliography as a predictor for psychological distress (Ríos-Risquez et al., 2018): the greater the emotional exhaustion, the worse the mental health. The most eagerly expected event amongst fourth-year students was for their practice sessions to end so that they could enter the world of work; this wait was cut short by the onset of the pandemic. In addition to a possible crisis experienced by those about to become nurses due to the suspension of their final practice sessions (Fowler and Wholeben, 2020), there is a feeling of a lack of organisational control and of uncertainty concerning the measures to be used for their evaluation and what would, or would not, constitute a satisfying end to their studies. This sensation of there being a lack of control over the organisation of the course, which was felt by many nursing students, may have also had an influence on the uncertainty that they sometimes experienced during the most decisive months of their university studies (Gibbons, 2010). Along these lines, in the study by Gibbons highlighted that it was possible to see how, as the problems with the organisation of the course increased, so too did emotional exhaustion. This sense of loss of control, also has an influence upon loss of confidence and causes a deterioration in student performance (Fowler and Wholeben, 2020).

Finally, our results also indicate that those students who did not experience the pandemic felt a greater sense of coherence. Furthermore, later analyses confirmed that a greater sense of coherence served as a protective factor with regard to psychological well-being. This means that those with the greatest sense of coherence have a permanent feeling of confidence and of having the necessary resources to confront the stimuli, deriving from internal and external environments, that they encounter in the course of their working lives and see these demands as "*challenges, worthy of investment and engagement*" (Antonovsky, 1993). The pandemic has caused anxiety, fear, insecurity and a certain intolerance for uncertainty amongst the population (Fowler and Wholeben, 2020; Usher et al., 2020). Amongst nursing students, it could also cause

a loss of professional orientation and lead them to have doubts about their chosen profession on account of the risks involved. A strong SOC demonstrated that this contributes to better mental health and may even improve the capacity to resist stress. In fact, it now allows the choice of a profession which, despite its high emotional demands, makes it possible for students to obtain satisfactory academic results while also feeling at ease with the profession that they have chosen (Colomer-Pérez, 2019). This should therefore be regarded as a very important aspect to work on with nursing students.

Even so, it is necessary to bear in mind some of the limitations of our study. One of the main ones is related to its transversal design, which makes it difficult to make causal inferences. However, given the nature of the variables, and thanks to the evidence and the theoretical explanation of the factors, it has been possible to interpret the causal relationship between them. It is also necessary to mention that all of the scales used were self-reported. This means that although they are universally accepted in the scientific literature, they may be vulnerable to the influence of the psychological state of the person concerned or by the level of i*nsight* that this person has into their own state of health; this could have produced some biased answers (Demetriou et al., 2015). Even so, self-reported measures provide very accurate information and one of the most realistic approximations to what the person who is being surveyed actually experiences at first hand.

6. Conclusion

The current study reveals the influence that the COVID-19 pandemic has had on the mental health of final-year nursing students, demonstrating that those who experienced the crisis face twice the risk of suffering mental health problems and even some form of mental disorder. It has also been shown that emotional exhaustion affects mental health but that, on the other hand, a high sense of coherence acts as a factor that protects from this. These students have now been incorporated into the health system, which has been highly conditioned by outbreaks of COVID-19 and we must add to this the discomfort caused to them during their final weeks of academic training. As a result, we wonder whether it would not be a good opportunity to extend the coverage of this study and to carry out a prospective follow up of this group of students. This would seem

justified due to the high risk of them suffering some type of mental disorder in the short or medium term.

7. Relevance for clinical practice

Almost half of the final year students, who in less than a month became nursing professionals, presented signs of impaired mental health. This shows that the mental health of students is something that must be taken into consideration in the training of nursing at universities. It is important to promote healthy habits and coping skills to combat this problem and to provide future professionals with the tools they need to deal with extreme situations, such as those experienced during the pandemic. Taking care of those who have to look after others is a responsibility that, as professors and professionals, we must take into consideration within our study plans. We must bring into the classroom techniques and strategies for dealing with stress and depression, such as mindfulness, that have been shown to be effective with university students (Fowler and Wholeben, 2020; Song and Lindquist, 2014; Usher et al., 2020).

The strong association experienced with the pandemic situation has also made clear the need to include specialised training in material relating to pandemics. Above all, this refers to managing emotions and coping strategies for dealing with this type of situation. This is not just because of the impact that the pandemic has had on the mental health of students, but also because of its effects on the population in general, who are the patients who will be treated by these future nursing professionals. The aftereffects of this crisis will linger on for a considerable time in the lives of both the students (now professionals) and their patients. It is therefore necessary to deal with this in the training of nurses as future health professionals.

8. References

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